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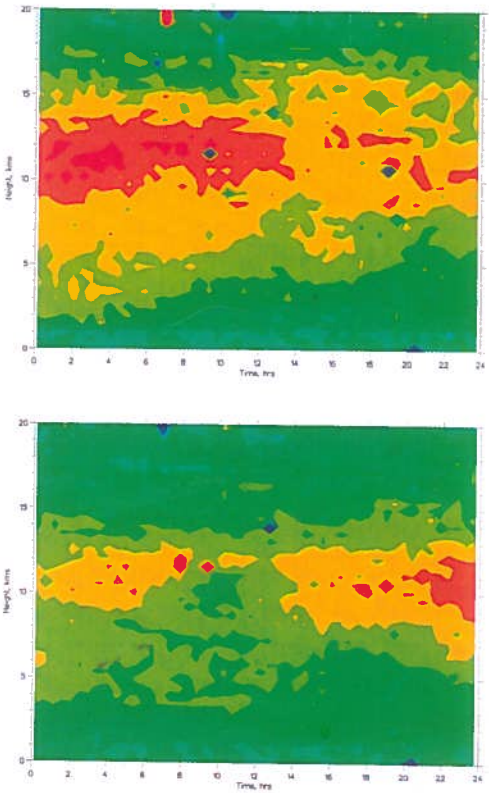
TWENTY FIFTH ANNIVERSARY SERC 1965-1990

The SERC Geophysical Data Facility

NOVICE GUIDE



Stratospheric winds from the MST radar - June 1990

Established at the Rutherford Appleton Laboratory to meet the data requirements of the Atmospheric Sciences and Solar Terrestrial Physics communities

- **Introduction**

  Welcome to the SERC Geophysical Data Facility (GDF). With the aid of this guide, a suitable terminal and a personal user account on the GDF microvax you will be able to enjoy all the basic facilities that the GDF has to offer. These facilities include retrieving data from the archive and using a host of GDF software tools to browse, list, save, plot and in some cases, analyse them. You will also be able to send messages to other registered users, transfer subsets of data back to your local computer for further processing and view on-line help about datasets and the GDF system. A set of companion guides will be made available to assist users needing more comprehensive information.

- **Connecting up**

  The main GDF computer is a microvax 3900 running VMS. The primary communications link into this computer is provided by JANET running X25 protocols. You may connect to the GDF via SPAN, PAD, Telnet and PSS (See Table 1.). You may need to set your terminal to "7 bit".

Table 1: Connecting to the GDF

PAD: or: or:	call GDF call UK.AC.RL.GDF call 4614[1]
SPAN: or:	set host GDF set host 19591
Telnet	connect 130.246.25.0
PSS - (phone) 234 219200 1069 followed by username, password .4614	

(1) *4614 is the DTE number, you may need to prefix this with eight zeros.*

- **What Equipment Do You Need?**

  To access the GDF menus you need an ANSII-Standard terminal, or a PC or workstation equipped with a suitable "VT100" or "VT200" emulator - phone or e-mail the Facility Manager for further details. The default standard adopted for graphics is Tektronics T4010. Since the GDF runs the UNIRAS graphics package, which supports a wide range of black-and-white and colour devices, you should have no difficulty in finding a suitable driver for your particular hardware.

- **New Users**

  You will need a personal user ID which you can obtain by returning the registration card attached to this brochure, or available from Dr. L. Gray at the address on page 9. When your card is received we will issue you with a personal user ID, a temporary password and an initial allocation of 1000 blocks of personal GDF disk space. We suggest that new and casual users should access the GDF through its system of user-friendly menu screens.

- **Logging on and off**

  At the login prompt enter your user ID and, at the password prompt, your password (which does not appear on the screen). If you are a new user, when you logon for the first time you will be told your current password has expired and you will be forced to change it. First the system will prompt you for your current password (ie the one given to you as a new user) and then for your new password (which must be at least 9 characters and/or digits). Finally you will be asked to type your new password again to serve as confirmation.

After that, the prompt "GDF$" will appear and you will be ready to start a GDF-menu session. When you finish the menu session, leave the menus by typing 'PF3' (or '3') and type 'logoff' (abbreviated: 'lo') to leave the system.

- **Starting a Menu Session**

  After the "GDF$" prompt, type 'GDF' to enter the menus. At this point a startup screen should appear which contains a brief description of the GDF. The text finishes with an invitation to press the 'enter' or 'return' key.

  When you type 'enter' or 'return' the top-level GDF menu will appear (Fig.1). If it does not, it probably means that the system believes that the terminal is not operating in "VT" mode. Try pressing 'CTRL' and 'Y' simultaneously to obtain the GDF$ prompt and then type 'SET TERM/VT100'; contact us if you have further problems at this stage.

- **Menus**

  To move up and down through the hierarchy of GDF menu screens, locate the option you require using the "up" and "down" cursor keys, and then press 'enter' or 'return' to select the option you want.

  To go back to a previous menu, use the "PF4" key. "PF" keys also allow you to quit the session tidily (PF3), to get help (PF1), and, most importantly, to retrieve data (PF2) - although on some menus PF2 takes you back up to the top-level menu, so read the prompt on the bottom line! If you are unclear how your "PF" keys have been set up, the menus accept numeric keys instead, so you can just type 1 - 4 if necessary.

Should you find yourself in real difficulties, try typing 'CTRL' and either 'Y' or 'C' simultaneously to stop the current operation. Depending on what you are doing this will return you either to a menu or to the GDF prompt. (When you do this a message is sent to the system log warning that the software you are using has finished execution abnormally - we will probably contact you in case you need help or if there is some system fault that we should investigate further.)

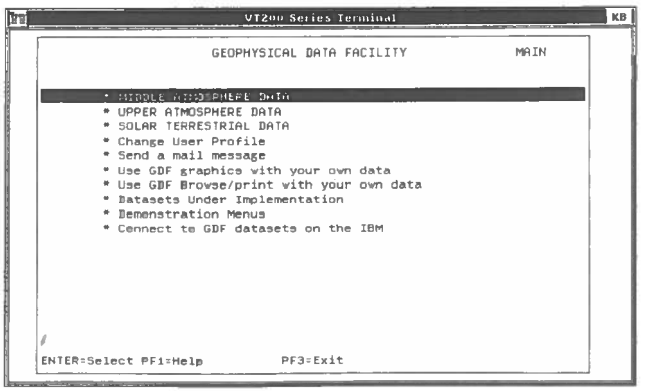


Figure 1: Top-level GDF Menu

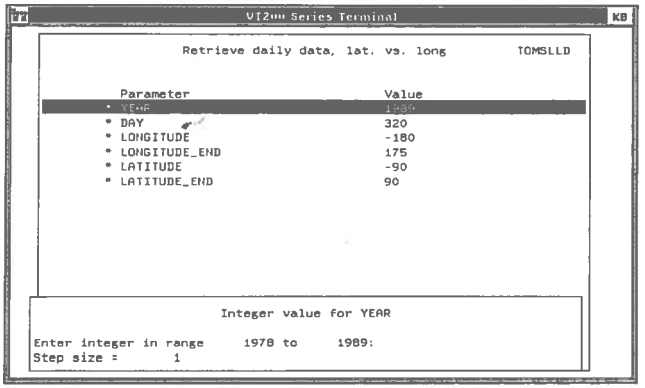


Figure 2: A Lower-level TOMS Menu

- **Your User Profile**

When you run the menu system for the very first time, it recognizes that you are a new user and assembles your personal user profile. The personal profile is important since it is frequently scanned by the system to establish what type of terminal you are working from, where any extracted data should be transferred to, and to which postal address you want us to send any GDF output produced at RAL. You may tailor your profile to your own special requirements by selecting the "Change User Profile" option on the main menu. Answer the questions as follows:

name - type your name here as you wish it to appear on your plots and listings;

e-mail username - this is the name of the user account where messages and data will be sent (it will normally be your account on your local university computer);

e-mail site - this is the recognised network address of your local university computer (for example UK.AC.RDG.AM.CMS would be the correct address for the Amdahl computer at Reading University).

postal address - this is the postal address to which we will send plots, listings, newsletters etc.

terminal-type and *plotter-type* - see page 11.

You can modify your profile at any time either permanently or temporarily; the former will change your default profile, while the latter only lasts for the current session and your profile reverts to the default one when you logout.

- **Sending Messages**

The GDF offers an easy-to-use facility, available from the main menu, for sending messages to other registered GDF users (who have supplied an e-mail address) and in particular to the GDF team. The text of the message must be input line by line. You should ensure that your line length does not exceed 80 characters otherwise an error may result. You can change the contents of the current line, but you cannot alter previous ones. When your message is complete, press return twice. You will then be asked to respond yes 'y' to signify the end of the message or no 'n', which means that you intend to include two blank lines as spacing in your text. A file "MESSAGE.TXT" is created in your personal filestore which is then e-mailed to the named user using the Vax facility POST. The MESSAGE.TXT file will remain in your personal filestore until you delete it.

If you have problems getting mail through it is possible that the recipient has supplied us with an incorrect e-mail address. Let us know and we will do our best to investigate.

If you need to send a message to a non-GDF user and you know the correct e-mail address, or if you need more advanced facilities such as distribution lists, leave the menu system (PF3) and type "MAIL". This will give you access to standard VMS mail. Type 'help' for further instructions, hints and examples.

- **Transferring Data**

You may send data back to your local computer for further processing. You may use the menu to "e-mail" the data to yourself, or alternatively you can leave the menus and use the standard VAX file transfer commands - Type 'help transfer' at the GDF$ prompt for further details. To

create an ASCII-copy of your retrieved data in your work-area file store use the print option on the appropriate menu. The file will be called GDF$WORK:ASCII$.DAT.

You can also file-transfer or e-mail graphics files - further details are given in the graphics guide.

- **On-line help**
  Extensive on-line help has been provided, based on the standard VAX facility. The help system describes datasets, software and the system generally. It is invoked from the menu by pressing PF1 (or 1). It has several levels accessed with the aid of keywords, the possible keywords available at each level being listed at the foot of each help page. Moving upwards (and eventually out!) is done by pressing "return". Typing 'CTRL' and 'Z' simultaneously, exits from any level.

- **Tidying Up**
  When you finish a GDF session you will be left with several files that you may or may not wish to delete. Type 'GDF cleanup' to delete all GDF-type files, except the main files, Retrieve$.dat and UDF$.dat, generated by your most recent transaction.

- **News**
  Typing 'GDF News' will provide you with information on the status of datasets under implementation, updates on existing data and software and plans for further releases. A list of news items posted in the last 7 days can be obtained by typing 'GDF List News'.

- **Other Facilities**
  The main menu also gives you the option of connecting to the RAL IBM. Use this to access WDC datasets, and also, at present, to access "AMPTE", "LIMS" and some "TOVS/SSU" data. The option simply provides a network link through to the IBM; you need a separate user account and password on the IBM in order to make use of IBM facilities. Contact us if you wish to use these datasets.

  Many of the GDF software tools can be run outside the menu, and the REXEC database software can be used interactively to sort and analyse files. These topics will be covered in future guides. However for the present, further information can be obtained by contacting the Facility Manager. Questions regarding the use of the database management system REXEC should be addressed to Dr Brian Read.

- **Security**
  Although any user may access most GDF datasets some are only accessible to "authorised" users. If you try to retrieve data from a restricted-access dataset a message will be displayed informing you that you are not authorized to access these data. The message will provide you with a contact name and address where you should seek authorization.

- **Problems**
  No new software environment is perfect. If you have a problem please tell us by e-mail or phone. If you don't, we can't help!

- **Some Useful Vax Commands**

  - DIR - lists the files in your personal directory.
  - DIR GDF$WORK - lists the files in your area of the shared "GDF" filestore.
  - DELETE fn.ft;x - deletes edition x of file called fn.ft, where fn=filename, ft=filetype. (An asterisk may be used in place of fn, ft or x to refer to all occurrences of this parameter.)
  - PURGE fn.ft - deletes all but the last edition of the file fn.ft
  - GDF - runs the GDF menu software
  - HELP - runs the VAX on-line help facility
  - LO - logout of the microvax
  - MAIL - runs the Vax mail facility
  - SET PASSWORD - alter your current password

- **For Further Information:-**

  - **Project Scientist: Dr Lesley Gray**
    tel. (0235) 446745
    e-mail: UK.AC.RL.GDF::LESLEY
    (Span:19591::LESLEY)
  - **Facility Manager: Chunkey Lepine**
    tel. (0235) 446745
    e-mail: UK.AC.RL.GDF::DRL
    (Span:19591::DRL)
  - **REXEC consultant: Dr Brian Read**
    tel. (0235) 446492
    e-mail: UK.AC.RL.GDF::BJR
    (Span:19591::BJR)

Rutherford Appleton Laboratory.
Space Science Department.
Chilton, Didcot, Oxon, OX11 0QX.

- **Selecting Datasets**

  Datasets are selected by choosing options from user-friendly menus. These are arranged so that you can identify datasets by specific name (eg SAMS); by data type (eg methane), or by instrument type (eg satellite). Once you have identified the dataset that you need, you must further refine your choice, by selecting for example, time interval, height range, type of averaging etc., using lower-level menus (see Fig.2). When you have chosen the required options and you are ready to retrieve data, type 'PF2' or the number '2'. The main menu includes a demonstration menu illustrating a few of the many products available from the GDF.

- **Retrieving Data**

  When you type 'PF2' or '2', the menu screen will disappear, a flashing message will be displayed saying "please wait", and the system will begin to retrieve your requested subset of data from the archive. If this process is likely to take a long time, messages will be displayed at regular intervals indicating the progress that has been made. (See, also, the section on restoring off-line data, on page 13.) When retrieval is complete the menu screen will reappear and you will be free to browse, plot or transfer the data at will.

- **Browsing Data**

  Two facilities are available for listing the retrieved subset at the terminal:

  "Browse" allows you to view the whole file. It is written with page-viewing options such as: PF1 or T (top), PF2 or B (bottom), RETURN (next page) and PF3 or P (previous page).

"Quick Browse" - displays the first and last ten records of the retrieved dataset. When you have finished browsing the data you can return to the previous menu by typing 'PF4' or '4'.

- **Drawing Graphs**

The GDF offers a wide range of menu-driven options for generating graphs of data including: X-Y line-plots, contour plots which can be displayed as line contours or area-fill false colour. False-colour *pixel-type* images for displaying original data will also be made available. Latitude-longitude contour plots can be drawn using a cartesian or polar-stereographic projection. Your plot can be displayed at your terminal or on a hard-copy device depending on your menu choice. For successful plotting it is important that the correct terminal or plotter type is specified in your user profile. A list of supported plot devices can be obtained from the "Graphics" menu. The GDF Graphics Guide gives hints on how to elucidate the correct terminal type for your user profile.

Plotting is carried out in two stages:

1. WISS File Creation

When you generate a plot, in most cases, the process starts by generating a Workstation Independent Segment Store (WISS) file. For efficiency this stage is bypassed when you re-plot the current graph (you might do this if your display screen becomes corrupted) or make a hard copy of a graph already displayed on your terminal. Making WISS files may take several minutes if, for example, the plot is interpolated onto a dense grid. Please be patient!

2. Display/Print

After the WISS-file has been created you may need to type 'return' to display the plot at the terminal screen - (watch the prompt).

The display process runs fairly quickly. Important: Do not touch the keys while the display program is running or the graphics and alpha data streams may be misinterpreted by the terminal.

If you choose the "print at RAL" option, a batch job will be submitted which will produce black-and-white plots on a postscript printer or colour plots on an LJ250 inkjet printer. These will be posted to you, provided of course you have completed the address section in your user profile. The GDF has many options for changing axis labels, zooming in and out, changing the projection, changing contour levels etc. - select the "Customise plot" option from the graphics menu and/or consult the GDF Graphics Guide for further details.

- **Saving Retrieved Data**

When you use the menu system to retrieve data, the files that the system creates are placed in a 'scratch' directory "GDF$WORK". Although GDF$WORK has a different sub-directory for each user, the resources are shared, allowing a single user to create many files without them counting against his personal file-store quota. As the GDF$WORK directory fills, it is tidied automatically. The system deletes the oldest files first, and files of which there are more than three with the same name.

There is a tool kit menu to help you organise your files in the GDF$WORK directory. The menu includes the functions: find, save, copy and delete. Obviously, you may also use stand-

dard Vax commands to rename files and copy them to your personal GDF disk space (ask the Facility Manager for details). However, since your personal disk space is necessarily limited, it is best to transfer data to your local computer if you wish to analyse it at a later date.

- **Restoring Off-line Data**

  The GDF employs two types of archive: a volatile on-line archive held on magnetic disks and an off-line archive stored on optical disks mounted in a 16-platter jukebox.

  When you attempt to retrieve data, the program checks that the data exist, that you have the authority to access them and that the data are on-line. If so the retrieval process copies your requested data subset from the archive to your work-area file store immediately. If the data are not on-line, the archive handler is instructed to reload the dataset as quickly as possible. If there is (a) sufficient space on the magnetic disk archive, (b) the jukebox is available, and (c) the amount of data requested is not excessively large, the dataset will be de-archived immediately. If there is likely to be some delay, a message will be displayed describing what action the system intends to take. You will be sent a message by e-mail telling you when the dataset has been restored (to magnetic disk) and is ready for you to use.

  Should you require access to large quantities of data, we will endeavour to arrange batch facilities or offer an alternative archive medium which can be sent to you by post.

- **Files Retrieve$.dat and UDF$.dat**

  Both these files are generated when you run any of the menu options to retrieve data and all GDF programs which create plots and listings, use both these files as input.

  Retrieve$.dat is a binary file containing the retrieved data subset. UDF$.dat is a plain text file (see Fig.3) which uses keywords to provide a complete description of the data, its presentation and the user who has requested it. It is constructed by combining information extracted from the menu with a "default" description of the data, and the user profile. This is how the system knows, for example, how to assign sensible default axes to any plot you request and how to label it with your name. It is this file that is updated if, for example, you decide to 'customise' your plot (see page 12).

  Your next data retrieval will normally overwrite these files.

```
XSTART          0.0
XSTOP           24.0
XMAJOR TICK     2.0
XMINOR TICK     1.0
X AXIS TEXT     Time, hrs
YSTART          0.0
YSTOP           20.0
YMAJOR TICK     5.
YMINOR TICK     1.0
Y AXIS TEXT     Height, kms
PLOT TYPE       COLOUR
CONTOUR         -10
CONTOUR         -5
CONTOUR         0
CONTOUR         5
CONTOUR         10
CONTOUR         15
CONTOUR         20
CONTOUR         25
CONTOUR         30
DATASET         MST
DATA TYPE       VEC WIND
X AXIS          TIME
Y AXIS          HEIGHT
DATE            90/06/26
TIME            00/00/00
TIME END        23/55/00
COMPONENT       EAST
PLOT TITLE      MST wind velocity (EAST,m/s) component
PLOT TITLE      Date 90/06/26 Time from 00/00/00 to 23/55/00
NPOINTS         27974
GDF USER        Tracey Eccles
EMAIL USER      te
EMAIL SITE      rlvp::te
TERMINAL TYPE   vperic
PLOTTER TYPE    ghp3630
```

Figure 3: The text file UDF$.dat used to draw the MST easterly-wind component plot on the cover (top). Keywords specify the plot description and the user who has requested it.

- **Left blank for your Notes**